

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the present application:

Listing of Claims:

Claim 1 (currently amended): A method for fabricating a damascene interconnect structure having one or more air trenches and a plurality of spaced-apart metal lines comprising:

(a) fabricating the damascene structure to a via level through a processing step prior to forming contact vias, wherein step (a) comprises:

depositing a first dielectric layer, and

depositing a first capping layer over the first dielectric layer;

(b) etching one or more air trenches into the damascene structure so that the air trenches are positioned between selected metal lines; and

(c) depositing a sealing layer over the damascene structure having air trenches to seal the air trenches.

Claim 2 (currently amended): The method of claim 1, wherein step (a) further includes:

~~depositing a first dielectric layer;~~

~~depositing a first capping layer over the first dielectric layer;~~

depositing a second capping layer over the first capping layer;

depositing a second dielectric layer over the second capping layer; and depositing a third capping layer over the second dielectric layer.

Claim 3 (original): The method of claim 2, further including:

etching an air trench in the first and second dielectric layers, and the first, second and third capping layers.

Claim 4 (original): The method of claim 1, further including:

forming a via in the sealing layer and the damascene structure; forming a metal plug in the via;

forming a trench over the sealing layer; and forming a conductive layer in the trench.

Claim 5 (original): The method of claim 1, further including:

depositing an etch stop layer over the sealing layer;

forming a via in the etch stop layer, the sealing layer and the damascene structure;

forming a metal plug in the via;

forming a trench over the etch stop layer; and forming a conductive layer in the trench.

Claim 6 (original): The method of claim 1, further including:

forming a via in the sealing layer;

forming a trench over the sealing layer;

forming a via in the damascene structure; and forming a conductive layer in the trench.

Claim 7 (original): The method of claim 1, further including:

forming a trench over the sealing layer;

forming a via in the sealing layer and the damascene structure; and forming a conductive layer in the trench.

Claim 8 (original): The method of claim 1, further including:

forming a via in the sealing layer and the damascene structure; forming a trench over the sealing layer; and forming a conductive layer in the trench.

Claims 9-20 (cancelled).

Claim 21 (new): A method for fabricating a damascene interconnect structure having one or more air trenches and a plurality of spaced-apart metal lines comprising:

(a) fabricating the damascene structure to a via level through a processing step prior to forming contact vias;

(b) etching one or more air trenches into the damascene structure so that the air trenches are positioned between selected metal lines;

(c) depositing a sealing layer over the damascene structure having air trenches to seal the air trenches;

(d) and depositing a polish stop layer over the sealing layer.

Claim 22 (new): The method of claim 21, wherein step (a) includes:

depositing a first dielectric layer;

depositing a first capping layer over the first dielectric layer;

depositing a second capping layer over the first capping layer;

depositing a second dielectric layer over the second capping layer; and depositing a third capping layer over the second dielectric layer.

Claim 23 (new): The method of claim 22, further including:

etching an air trench in the first and second dielectric layers, and the first, second and third capping layers.

Claim 24 (new): The method of claim 21, further including:

forming a via in the sealing layer and the damascene structure; forming a metal plug in the via;

forming a trench over the sealing layer; and forming a conductive layer in the trench.

Claim 25 (new): The method of claim 21, further including:

depositing an etch stop layer over the sealing layer;

forming a via in the etch stop layer, the sealing layer and the damascene structure;

forming a metal plug in the via;

forming a trench over the etch stop layer; and forming a conductive layer in the trench.

Claim 26 (new): The method of claim 21, further including:

forming a via in the sealing layer;

forming a trench over the sealing layer;

forming a via in the damascene structure; and forming a conductive layer in the trench.

Claim 27 (new): The method of claim 21, further including:

forming a trench over the sealing layer;

forming a via in the sealing layer and the damascene structure; and forming a conductive layer in the trench.

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(cont.)*
Claim 28 (new): The method of claim 21, further including:

forming a via in the sealing layer and the damascene structure; forming a trench
over the sealing layer; and forming a conductive layer in the trench.
